

Remarks

The above-referenced application has been reviewed in light of the Examiner's Final Office Action dated June 16, 2005. Claims 2-4 have been canceled; and Claims 1 and 11 have been amended. Therefore, Claims 1 and 5-21 are currently pending in this application. The Examiner's reconsideration of the rejections is respectfully requested, particularly in view of the above amendments and the following remarks:

In accordance with the Office Action, the drawing Figures 8 and 9 each drew an objection for clarity. Replacement drawing sheets having improved clarity are submitted herewith. In addition, the legend "Prior Art" has been added to Figure 9.

In accordance with the Office Action, Claims 1-21 stand rejected under 35 U.S.C. § 102(b) as being anticipated by IEEE Publication Number 1080-1820/97 to Pasko et al. entitled "Optimization Method for Broadband Modem FIR Filter Design using Common Subexpression Elimination" (hereinafter "Pasko '97"). Claims 2-4 have been canceled, while Claims 1 and 11 have been amended.

Claim 1 has been amended to incorporate the features of canceled Claims 2-4, and to generally address typographical and/or grammatical quality. Claim 11 has been amended to recite "virtual common subexpressions", which were already inherent in the claim. No new issues have been raised.

Each of Applicant's Claims 1 (amended), 7, 11 (amended), 14 and 17-21 recite, *inter alia*, a "virtual common subexpression". Applicant defined the term

“virtual common subexpression” in the application as originally filed (see Application at p.12, line 27 through p.13, line 2). Thus, a “virtual common subexpression” is a subexpression that was not originally common to any filter coefficients, but was instead “designed and changed ... by using an existing ... subexpression” “bit-shifted, bit-added, or bit-inverted ... into an artificial ... (or) virtual common subexpression” (*Id.*). The meanings of “bit-shifted”, “bit-added” and “bit-inverted” were described in the specification with respect to Figures 4, 5 and 6, respectively, as being single bit operations to synthesize a virtual common subexpression from an existing subexpression.

The Pasko '97 reference was previously discussed in Applicant's amendment filed on 22 April 2005. The applicability of that discussion is maintained, but said text will be omitted here for the sake of brevity. In addition, the Pasko '97 reference shows the use of conventional common subexpressions as discussed by Applicant in the specification as originally filed (see, e.g., Application at page 22, line 22 through page 23, line 10; *Id.* at Figure 9, now labeled “Prior Art”). Pasko fails to teach or suggest a “virtual common subexpression” as presently claimed and originally disclosed by Applicant (see, e.g., Application at p.12, line 27 through p.13, line 2; p.23, line 11 through p.24, line 22; *Id.* at Figure 8).

Applicant respectfully submits that the method of Pasko '97 is one of many methods known in the art for predetermining or preselecting a somewhat optimized subset (per design iteration) of the existing common subexpressions to reduce

adders, for example. On the other hand, Applicant's disclosure of virtual common subexpressions can further reduce the number of adders beyond what was contemplated by conventional methods, including those of Pasko et al. For example, Applicant's virtual common subexpression embodiment as described with respect to Figure 8 uses 21 fewer adders than the conventional common subexpression example of Figure 9, which merely detects or selects existing common subexpressions as per Pasko et al. Thus, virtual common subexpression embodiments of Applicant's presently claimed invention may be applied following a conventional common subexpression elimination to further reduce hardware and/or processing requirements. Applied alone, the method of Pasko et al. would not result in the "virtual common subexpression" embodiment of Figure 8, for example, and as presently claimed.


Therefore, each of Claims 1, 7, 10-11, 14 and 17-21 is neither taught nor suggested by the Pasko '97 reference, nor by any of the other references of record in this case.

Conclusion

Accordingly, it is respectfully submitted that amended independent Claims 1 and 11, as well as independent Claims 7, 10, 14 and 17-21, are in condition for allowance for at least the reasons stated above. Since the dependent Claims 5-6, 8-9, 12-13 and 15-16 each depend from the above claims and necessarily include the elements and limitations thereof, it is respectfully submitted that these claims are also in condition for allowance for at least the reasons stated, and for reciting additional patentable subject matter.

All issues raised by the Examiner having been addressed, reconsideration of the rejections and an early and favorable allowance of this case are earnestly solicited.

Respectfully Submitted,

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